GREEN SEAL'S Chase GREEN REPORT

NOVEMBER 1999

PRINTING AND WRITING PAPERS

- Americans use approximately 31.5 million tons of printing and writing paper each year, an amount requiring over 535 million trees and more than 12 billion gallons of oil to produce
- More paper products are now recovered than sent to landfills in the US, yet 65 percent of used printing and writing paper still ends up in the waste stream
- The pulp and paper industry, ranks first in use of industrial process water, third in toxic chemical releases and fourth in emissions of the air pollutants known to impair respiratory health

It is unlikely that use of paper as a medium for communication will diminish in the near future — if ever. Despite technological advances and visions of the "paperless office," we are actually using more paper than before the electronic age that was supposed to have rendered us paper-free! Every day millions of sheets of business paper are used to meet a multitude of needs, whether for advertising, formal correspondence or professional publications. Although important functions, these pursuits do not come without detriment to the environment and, in turn, health. Paper production and use — from forest management and tree harvesting to pulping and bleaching as well as handling used paper — can create severe environmental impacts.

The use of virgin fiber in paper raises concerns regarding how forests are managed, trees are harvested and pulp is processed. If harvesting trees for pulp production is done in a way that is unsustainable for the long-term health of the forest, then the myriad of other benefits derived from the forest will be lost.

Despite technological advances and visions of the "paperless office," we are actually using more paper than before the electronic age.

For instance, trees help to offset global warming by absorbing carbon, while forestlands conserve biodiversity by providing habitats for both plant and animal life to exist in healthy populations. In addition, non-timber forest products of value range from medicinal plants and wild mushrooms to scenic views and recreation. Imagine what it would be like without large tracts of forested land in which to roam!

In addition to potential impacts attributed to obtaining raw materials for paper production, a host of adverse environmental and health effects can be associated with virgin pulp processing. For example, producing pulp and paper requires large quantities of water and chemicals, and is also quite energy-intensive. The toxic air emissions and wastewater effluent from paper mills can cause serious problems, particularly for local communities and ecosystems. Chemicals used in pulping and bleaching virgin fiber, such as chlorine, are not only dangerous to manufacture and handle, but their use generates by-products which are highly toxic to humans and aquatic life when released into the environment. These by-products include actual or potential carcinogens, and compounds that can severely affect the reproductive and endocrine systems of exposed populations.

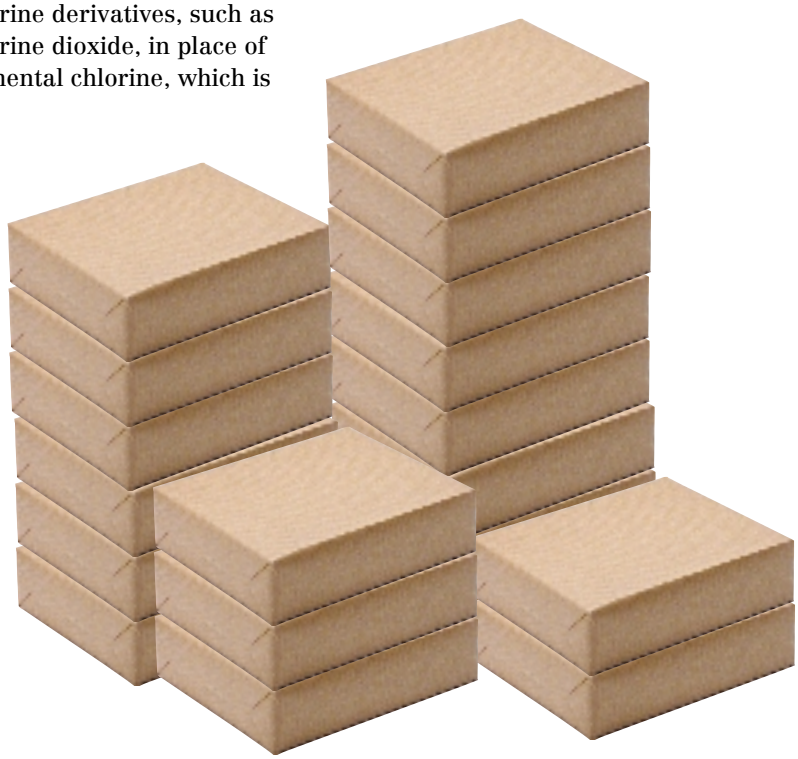
Simple changes in our paper use and purchasing practices can help limit the depletion of forests and loss of habitat, reduce pollution and decrease the stress on our landfills. To this end, Green Seal recommends papers with at least 30% post-consumer recycled content and the use of chlorine-free production methods. Any pre-consumer or virgin fibers used in the recycled content paper must not be bleached with elemental chlorine. Several companies are using chlorine derivatives, such as chlorine dioxide, in place of elemental chlorine, which is acceptable given sufficient post-consumer recycled content. Green Seal also recommends some papers made with 100 percent virgin tree pulp, if processed completely without chlorine or its derivatives. Green Seal encourages both the increased use of post-consumer recycled fibers *and* the elimination of chlorine usage.

Federal Executive Order 13101 *mandates that all federally purchased paper should contain no less than 30% post - consumer recycled content.*

Green Seal reviewed the products of 20 manufacturers and evaluated them against the environmental criteria mentioned above. A list of the papers that meet the criteria is included at the end of this report. Purchasing products that are chlorine-free and include post-consumer fibers will reduce the strain on natural resources, promote resource conservation and waste reduction, and minimize toxic emissions.

Making the Grade

Grades are used to distinguish among the different uses for a particular paper, which necessitate different performance characteristics. In this *Choose*



The ***Choose Green Report*** is published for Green Seal Environmental Partners. To become an Environmental Partner, or to receive a copy of this report, contact Green Seal at 202-872-6400 x 21 or greenseal@ greenseal.org.

Green Seal President and CEO, *Arthur B. Weissman*

Editor, *Debra Shepherd*

Design, *Cutting Edge Graphics*

Printed on Green Seal-certified Mohawk Satin Cool White Recycled paper, 30% postconsumer content

GREEN SEAL
Environmental Partner

Green Report, we focus on writing, text and cover papers, some of the most common grades of printing and writing papers used by businesses. They are often of heavier basis weight and utilize more coatings and inks than basic copy paper, a topic to be covered in an upcoming issue of the *Choose Green Report*.

■ ***Writing (or Bond)*** — Writing papers are commonly used for business letterhead and forms. The paper surface readily accepts ink and can withstand erasures without damaging the surface. These qualities render the papers most suitable for use with pen and ink or typewriters, but they are also adequate for printing.

■ ***Text*** — Text papers are known for the range of textures, colors and basis weights available in this grade. They are often treated to make them more water-resistant and facilitate offset lithographic printing. Text papers are commonly used for brochures and booklets.

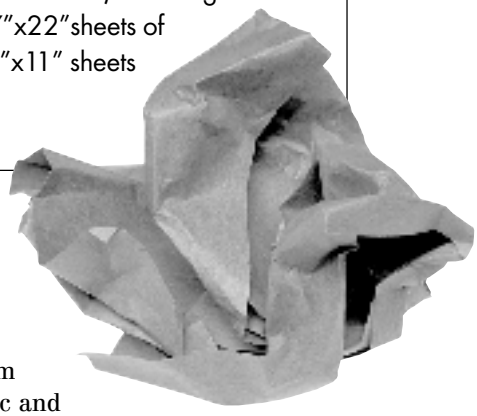
■ ***Cover*** — Cover papers are often made in a heavier basis weight to complement their text counterpart. These papers are extremely durable, stable and maintain a uniform printing surface. Cover stock can be found in various textures and colors, and is commonly used for booklet covers and small binding jobs.

Due to the additional fillers, colors and coatings often used in these grades, recycling them results in more — and more hazardous — sludge than when recycling other paper products, such as corrugated cartons, newspapers and copy paper.

Paper: Basic Sizes & Basis Weights

GRADE	BASIC SIZE (in)	COMMON BASIS WEIGHTS (lbs / ream)
Writing Papers	17 x 22	20 – 40 #
Text Papers	25 x 38	30 – 100 #
Cover Papers	20 x 26	50 – 130 #

Remember, *basis weight* is the weight of a ream of paper *at its basic size*. So, a ream of 17"x 22" stationery (its basic size) that weighs 24 pounds is called "24#". This ream of 17"x22"sheets of 24# stationery produces four reams of 8.5"x11" sheets (each weighing six pounds).



Raw Material Selection

Forests and timberlands, if properly managed, can provide trees as a source of raw materials for paper as well as innumerable other economic and ecological benefits. Certification that forest products such as lumber were harvested from sustainably managed lands is difficult, as it requires verifiable chain-of-custody information from the forest to the retailer. This can be even more challenging with regard to pulp, which is further down the supply chain and is a commodity that paper mills may purchase from various sources. However, the Forest Stewardship Council (FSC) has begun to address certification of this commodity. In fact, Lyons Falls Pulp & Paper is the first company in the world to offer paper certified by the FSC as containing pulp from sustainably managed forests. Because so few paper products in the United States are certified in this manner, it is not yet a prevalent enough attribute to use as a criterion for selection.

There are several alternative fibers on the market for producing paper, such as kenaf, hemp, agricultural residual materials, denim fabric and even paper money. The technologies are improving such that it is feasible to use papers made from these less conventional fibers. However, unless these fibers are cultivated and harvested in an environmentally responsible manner and obtained from a regional source, the benefits of using a tree-free paper can be negated by the environmental impacts associated with agricultural practices, manufacture or transportation. Furthermore, tree-free papers may have a distinct color or texture that is not always suitable for general printing or writing applications and may be priced above what some businesses or organizations can afford. Thus, we have chosen to focus this report on the use of post-consumer fibers and chlorine-free bleaching methods, and to recommend paper products that are most commonly used and readily available.

Recycled Content

Recycled fibers have been used in paper for quite some time, as paper manufacturers traditionally reprocess mill scraps in paper production. This **pre-consumer** material may include shavings, cuttings, and unused paper stock from previous jobs or even other mills. Utilizing this source of recycled material has been and will remain common industry practice, and is not considered a significant factor in resource use reduction or pollution prevention. It is the use of **post-consumer** recycled content that is important for conserving resources and minimizing pollution and waste. Post-consumer fiber comes from paper that has served its original purpose for the end user, and is subsequently diverted from the stream of waste going to a landfill or an incinerator. Higher post-consumer recycled content also means fewer trees are needed to meet the demand for paper. The **total** recycled content refers to the amount of post- and pre- consumer fibers contained in the paper.

Using paper that contains sufficient levels of post-consumer recycled fibers is generally preferable to using paper that is made with 100 percent virgin pulp for several reasons. First, recycling one ton of paper saves 3 cubic yards of increasingly scarce landfill space. Also, although the paper may have been chlorine bleached for its initial use, the impacts cannot be undone. But any chlorine residues, as well as colors and finishes, may cause further harm by leaching from landfills or through air pollution created during incineration. Finally, virgin pulp, even when processed completely without chlorine or derivatives, still requires the harvesting of trees.

From a life cycle perspective, recycled fibers cause less environmental harm than virgin pulp even after accounting for slight increases in resource use and pollution from paper collection and processing when compared to its disposal.

Pulp Processing

The most common processes used to extract cellulose fiber from wood are mechanical, chemical or a combination of the two. The mechanical method involves grinding whole logs or chips, resulting in groundwood pulp that contains impurities such as lignin. Because of this, the groundwood pulp is primarily suitable for applications such as newsprint, but it may also be used as filler in higher-grade papers. Chemical pulping requires soaking wood chips in a sulfate or sulfite chemical bath, often accompanied by heat and pressure, to eliminate most of the impurities. This pulp is used to make some of the higher paper grades. Mechanical pulp production typically uses more energy but produces less water pollution than chemical pulping.

Bleaching removes any remaining impurities and brightens the material. Elemental chlorine was once considered to be the most effective method to remove impurities and dissolve lignin, but recent studies have shown that the chlorine-bleaching process produces dangerous organo-chlorine compounds such as dioxins and furans. Studies conducted in the US and abroad indicate a link between dioxin exposure and increased occurrences of certain kinds of cancers, and organo-chlorines mimic natural hormones, adversely impacting the reproductive and immune systems, and causing developmental abnormalities. These compounds in mill wastewater are discharged into the environment, where they persist and accumulate in the ecosystem and up the food chain. With more than 1.5 trillion gallons of wastewater being produced by the paper industry each year, the increased use of alternatives to

BLEACHING DEFINITIONS

Papers are often identified according to bleaching classification. Papers bleached with a derivative of chlorine, such as chlorine dioxide, instead of elemental chlorine are called *"elemental chlorine free" (ECF)*. Papers bleached without any chlorine or chlorine derivatives are sometimes referred to as *"totally chlorine free" (TCF)*. Recently, a new term has been introduced in attempts to further refine the term TCF: *"process chlorine free" (PCF)*. PCF and TCF are both intended to identify paper which has not been bleached with chlorine or chlorine derivatives in its current production cycle. However, use of PCF is intended for paper that contains fibers from recovered paper that may have been bleached with chlorine before it was recycled, while TCF would be used for paper that contains only fibers that have never been chlorine bleached. In other words, PCF paper would contain recycled fibers while TCF paper can only contain virgin fibers. Because there is not consensus on the use of these terms, Green Seal will group the papers in the table simply by using generic, descriptive terms rather than using these acronyms.

chlorine bleaching is greatly needed. Use of chlorine dioxide, a derivative of chlorine, can reduce these toxic releases by approximately 90% compared to the use of elemental chlorine. Fortunately, other means of brightening using ozone, hydrogen peroxide or oxygen are now being used, which avoid the releases of chlorine and its derivatives completely.

Positive Paper Purchasing

Aside from the first step of reducing the quantity of paper used, there are other ways to minimize environmental impact through improved purchasing practices.

Reduce basis weight

Knowing the range of basis weights available is relevant in paper selection, especially when trying to mitigate environmental impacts. The **basis weight** is the weight of one ream of paper (500 sheets) in the basic size for that grade. The **basic size** differs among the paper grades (see page 3), and can differ from the standard size of the final product.

The nature of the printing job at hand will generally dictate the grade of paper needed. However, there is often a range of basis weights *within* a given grade, offering flexibility in decision-making. For example, by opting for 20# writing paper instead of 24# stock for business stationery, an office that uses only two reams per week would, in essence, get 10,400 sheets of stationery free per year. This is because the change would save 104 pounds of paper per year, which equals almost 21 reams of the 20# stationery. Select the lowest basis weight acceptable for your printing job. This will reduce the amount of pulp, resources used and waste generated for each sheet of paper.

CLOSE THE LOOP

Recycling is only viable as long as there is a market for the recycled materials. By buying products with post-consumer recycled content, in conjunction with recycling your own used materials, you will help to support the market for recycled fibers as well as reduce the environmental impacts of your operations. You will likely save money due to a reduction in waste disposal costs, and may even earn revenue from selling recyclable paper.

Select papers with post-consumer recycled fibers

Whenever possible, choose paper made with a minimum of 30% post-consumer recycled fiber. Producing paper with recovered materials not only reduces solid waste and the need for virgin pulp, but also generates less pollution and uses less total energy and other resources than producing paper from virgin fibers.

Use discretion with brightness and bleaching

Certain documents will need to be white, but not always the brightest white available. Most papers with or without recycled content can provide the desired level of brightness and contrast to text or graphics without using chlorine. Evaluate the need for whiteness against the potential environmental and health impacts of bleaching, and choose papers made without elemental chlorine, with preference given towards a completely chlorine free product.

Minimize the use of coatings and colors

Coatings provide performance and aesthetic elements to paper, which may be desirable for particular printed materials. However, recycling paper with coatings, colors or finishes can generate more sludge or harmful waste by-products than untreated paper. Also, this paper may not be included in some office recycling programs. Whenever possible, avoid or reduce the use of papers with these potentially polluting additives.

Recycle your used paper

Develop or strengthen your own recycling program, and ensure that employees and maintenance staff are aware of their roles. Newspaper and corrugated cardboard have achieved high rates of recycling, and higher-grade paper recycling is increasing. However, only 35% of printing and writing paper is recycled, which leaves significant room for improvement. Higher grade papers result in better quality recycled fibers, which can then be used in a wider variety of recycled content products. Finally, by contributing paper for recycling, you are helping to keep prices for recycled products down.

Recommended Printing and Writing Papers

The papers listed in this report generally meet the minimum criteria of having at least 30% post-consumer recycled fiber and being elemental chlorine-free. Many of the papers with recycled content go beyond these baseline criteria, in that they have greater post-consumer fiber and/or they use no chlorine or its derivatives. We have included some papers that are made with 100% virgin fiber, but these are made without any chlorine or chlorine derivatives.

MANUFACTURER BRAND	%P-C	%TRC	BASIS WEIGHT (#)	BRIGHTNESS
Minimum 30% post-consumer recycled content and no elemental chlorine				
Mohawk Paper Mills Mohawk Options: Whites – Sands	100	100	28 W 70 T 80 C	Colors
Mohawk Paper Mills Mohawk Options: Whites	30	30	28 W 70 T 80 C	Naturals and Heathers
Mohawk Paper Mills Mohawk Options: Colors	30	30	70 T 80 C	Heathers
Mohawk Paper Mills Mohawk Satin	30	30	24, 28 W 60, 70, 80 T 65, 80 C	90 – Cool White
Mohawk Paper Mills Mohawk Vellum Whites	30	30	24, 28 W 60, 70, 80, 100 T 65, 80 C	90 – Cool White
Mohawk Paper Mills Mohawk Vellum Colors	30	30	24, 28 W 60, 70 T 65 C	Colors
Mohawk Paper Mills Mohawk Superfine: White Recycled	30	30	24, 28 W 70, 80 T 65, 80 C	89
No elemental chlorine or chlorine derivatives				
Mohawk Paper Mills Mohawk Options TCF	0	0	24, 28 W 80 T 65, 80 C	N/A
Minimum 30% post-consumer recycled content and no elemental chlorine or chlorine derivatives				
Badger Paper Mills Envirographic 100	100	100	20, 50 T	85
Domtar Papers Sandpiper	100	100	24 W 60, 70, 80 T 65, 80 C	Colors
Fort James Eureka! 100	100	100	20 W	84
New Leaf EcoOffset	100	100	50, 60 T	85
New Leaf Everest	80	80	24 W 80 T 80 C	90

NOTES

T = Text
C = Cover
W = Writing

%P-C = Percent Post-Consumer Recycled Content
%TRC = Percent Total Recycled Content
* amount varies: paper made per customer specification

Recommended Printing and Writing Papers (cont.)

MANUFACTURER BRAND	%P-C	%TRC	BASIS WEIGHT (#)	BRIGHTNESS
Minimum 30% post-consumer recycled content and no elemental chlorine or chlorine derivatives				
New Leaf New Leaf Satin	75	100	47 T	84
Stora Enso Cyclus Print	75	100	61–100 T 63, 74 C	76
Stora Enso Cyclus Offset	75	100	47–101 T 63, 74, 92 C	69
Rolland New Life DP 100	60	80	20, 24 W	88
New Leaf Reincarnation	50	100	60–105 T 80–115 C	88
Arbokem Downtown Paper #3	50	50	50, 60 T	82
Fraser Papers Genesis PCF	30	100	61–80 T 80 C	N/A
Neenah Paper Environment – Cream only	30	100	24 W 80 T 80 C	N/A
Stora Enso Reprint	30	50	47–100 T 63, 74 C	84
Lyons Falls Pulp & Paper FSC Certified (see text)	~30*	~30–70*	40–70 T	Varies
Minimum 30% post-consumer recycled content and no elemental chlorine				
Fraser Papers Genesis	100	100	24 W 60–100 T 65–80 C	N/A
Gilbert Paper Correspond 25% Cotton Recycled	30	100	20, 24 W	93
Gilbert Paper Union Watermarked 25% Cotton	30	100	20 W	93
Gilbert Paper Neutech 25% Cotton Recycled	30	100	20, 24 W	93
Neenah Paper Environment	30	100	24 W 80 T 80 C	91 – White 95 – Ultra Bright White
Gilbert Paper Chadwick 25% Cotton	30	85	20, 24 W	93
Gilbert Paper Gilbert Manuscript 25% Cotton	30	85	26 W	N/A
Fraser Papers Halopaque	30	80–100	40–105 T 65–80 C	86 – Blue White 72 – Cream White
Fraser Papers Troy Book	30	80–100	40–80 T	80 – Blue White 72 – Cream White
Fraser Papers Miami Book	30	80–100	40–80 T	78 – Blue White 68 – Cream White

NOTES

T = Text
C = Cover
W = Writing

%P-C = Percent Post-Consumer Recycled Content
%TRC = Percent Total Recycled Content
* amount varies: paper made per customer specification

Recommended Printing and Writing Papers (cont.)

MANUFACTURER BRAND	%P-C	%TRC	BASIS WEIGHT (#)	BRIGHTNESS
Minimum 30% post-consumer recycled content and no elemental chlorine				
Gilbert Paper Neutech PS	30	60	24 W 80 T 80, 120 C	90
Gilbert Paper Gilbert Cover Recycled	30	60	80 C	93
Gilbert Paper Gilcrest	30	60	24 W 80 T 80, 120 C	93
Gilbert Paper ESSE	30	60	24, 48 W 70, 80 T 80, 110 C	93
Gilbert Paper Oxford	30	60	24 W 80 T 80, 100 C	88
Gilbert Paper Realm	30	60	24 W 70, 80, 100 T 80, 100 C	94
Gilbert Paper Voice	30	60	24 W 70, 80 T 80, 100 C	93
Neenah Paper Classic Linen	30	60	24 W 70, 80 T 80, 100, 120, 130 C	91
Neenah Paper Classic Crest	30	60	20, 24 W 80 T 80 C	91
Neenah Paper Classic Columns	30	60	24 W 80 T 80, 120 C	91
Neenah Paper Classic Laid	30	60	20, 24 W 70, 75, 80 T 65, 80, 88, 120 C	91
Neenah Paper Neenah Bond – 25% Cotton Bond	30	60	24 W	86
Neenah Paper Atlas Bond – 25% Cotton Bond	30	60	20, 24 W	91 – White 95 – Ultra Bright White
Fraser Papers Passport	30	50–100	50–80 T 65, 80 C	N/A
Domtar Papers KAOS	30	50	28 W 70 T 80, 100 C	Colors
Fraser Papers Synergy	30	50	60–80 T 65–80 C	90 – White 72 – Natural
Gilbert Paper Chadwick Cover – Smooth	30	30	80 C	93
Hammermill Premiums Hammermill Bond	30	30	20, 24 W	92

NOTES

T = Text
C = Cover
W = Writing

%P-C = Percent Post-Consumer Recycled Content
%TRC = Percent Total Recycled Content
* amount varies: paper made per customer specification

Recommended Printing and Writing Papers (cont.)

MANUFACTURER BRAND	%P-C	%TRC	BASIS WEIGHT (#)	BRIGHTNESS
Minimum 30% post-consumer recycled content and no elemental chlorine				
International Paper Savings DP	30	30	20, 24 W	84
International Paper Fore DP Colors	30	30	20, 24 W	84
International Paper Accent Opaque	30	30	50, 60, 70 T 65, 80 C	90
Rolland New Life Opaque Repro	30	30	50, 60, 70 T	91
Weyerhaeuser Recycled Lynx Opaque	30	30	50, 60, 70 T 65, 80 C	92
Weyerhaeuser Recycled Lynx Opaque Laser Guaranteed	30	30	20, 24 W 50, 60 T	92
Weyerhaeuser Recycled Husky Offset	30	30	50, 60, 70 T	84
Domtar Papers Naturals	20–45	55–100	24 W 60, 70, 80 T 80 C	Colors
No elemental chlorine or chlorine derivatives				
Lyons Falls Pulp & Paper Turin Book TCF	0	0	40–70 T	67 – Natural
Lyons Falls Pulp & Paper Pathfinder Tradebook TCF	0	0	40–70 T	69 – Natural 78 – White

NOTES

T = Text
C = Cover
W = Writing

%P-C = Percent Post-Consumer Recycled Content
%TRC = Percent Total Recycled Content
* amount varies: paper made per customer specification

MANUFACTURER CONTACT INFORMATION

Arbokem	604.322.1317	Lyons Falls Pulp & Paper	315.348.2228
Badger Paper Mills	800.826.0494	Mohawk Paper Mills	800.TheMill
Domtar	800.6DOMTAR	Neenah Paper	800.338.6077
Fort James	800.854.5345	New Leaf Paper	888.989.5323
Fraser Papers	937.859.5101	Rolland	800.388.0882
Gilbert Paper	800.445.4465	Stora Enso North America	888.407.8672
Hammermill	800.242.2148	Weyerhaeuser	800.523.5590
International Paper	901.763.7800		

1001 CONNECTICUT AVE., NW
SUITE 827
WASHINGTON, D.C. 20036

NON-PROFIT ORG.
US POSTAGE
PAID
WASHINGTON, DC
PERMIT NO. 5515

IN THIS ISSUE

RECOMMENDED READING

The Consumer's Guide to Effective Environmental Choices: Practical Advice from the Union of Concerned Scientists
by Michael Brower and Warren Leon
Three Rivers Press, $15

Natural Capitalism: Creating the Next Industrial Revolution
by Paul Hawken, Amory Lovins, and L. Hunter Lovins
Little, Brown and Company, $26.95

Mid-Course Correction: Toward a Sustainable Enterprise
by Ray C. Anderson
The Peregrinzilla Press, $17.95

Sustainable Cuisine: White Papers
Earth Pledge Foundation, Series on Sustainable Development